

TITLE

COMPARISON OF FRICTIONAL RESISTANCE BETWEEN MONOCRYSTALLINE AND POLYCRYSTALLINE BRACKETS IN CONVENTIONAL AND SELF LIGATING CERAMIC BRACKETS USING DIFFERENT ARCHWIRE ALLOYS.

BACKGROUND:

Friction is the one of the main factor that influences the sliding mechanics. In this study the frictional resistance generated by monocrystalline and polycrystalline brackets in conventional and self ligating ceramic brackets has been evaluated and compared using different archwire alloys

MATERIALS & METHODS:

There are three groups of ceramic brackets and total of 72 ceramic brackets were tested and five different archwire alloys and total of 90 maxillary archwires were used. The maxillary central incisor to second premolar brackets (first quadrant) with 0.022 x 0.028 inch slots with all having MBT prescriptions were selected for this study. The samples were grouped based on their crystalline microstructure and ligation type .group a- Conventional monocrystalline full ceramic bracket ,group b- Conventional polycrystalline full ceramic bracket and group c- Self- ligating polycrystalline full ceramic bracket . Archwires of Stainless steel archwire, Nickel Titanium archwire, Titanium molybdenum, Ceramic coated NiTi archwire, and Ceramic coated Stainless steel archwire were selected. Both kinetic and dynamic friction was tested using Instron 33R 4467 machine.

RESULTS

The results showed that among brackets self ligating polycrystalline brackets created higher static friction and conventional monocrystalline brackets created least friction. Among archwires Beta titanium shows higher friction and stainless steel archwire created least friction.

CONCLUSION

“Self-ligating ceramic brackets exhibited less friction than conventional ceramic brackets” is a marketing claim only. Results showed that self ligating polycrystalline brackets created higher static friction than conventional monocrystalline brackets.